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The Effect of Alcohol on Sex-Related Emotional Reactions

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The Effect of Alcohol on Sex-Related Emotional Reactions

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Abstract

The Effect of Alcohol on Sex-Related Emotional Reactions

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Facilitated by the cognitive impairment described in alcohol myopia theory (AMT), alcohol can be a catalyst of unplanned sexual activity, which can result in harmful emotional consequences that are particularly salient in women. We aimed to expand on previous research by examining how sociosexuality (permissiveness towards casual sex), gender, and alcohol influence the interpretation of a hypothetical alcohol-fueled sexual encounter. Participants (N = 107) were re-recruited from a 6-year longitudinal study in order to participate in a placebo-controlled alcohol challenge study. Beverage condition (alcohol; placebo), gender, and sociosexuality were used to predict negative affect and regret in reaction to a sexual encounter described in an eroticized experimental story. Negative affect and regret were measured both during the laboratory protocol and the following day. In a repeated measures analysis of variance model there was a significant time by beverage condition interaction such that the ratings of negative affect in reaction to a sexual scenario remained stable for those in the alcohol condition

between the two assessments, while those in the placebo condition felt less negatively across time. When examining negative affect and regret during the laboratory protocol and the following day separately, women and those who are more conservative about uncommitted sex felt more negatively and had more regret after projecting themselves into the experimental story. Being intoxicated may contribute to labeling sexual behavior as atypical, attributing the behavior to an external source, and therefore labeling it as less desirable. In comparison, a sober sexual encounter may be attributed to a personal choice and thus, could be considered more aligned with personal values and may cause fewer negative feelings or less regret. Further, more permissive views about casual sex and male gender are protective against negative feelings about sex.

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Chapter 1: Introduction

Alcohol facilitates different types of risky sexual behavior including sex without a condom (Kiene, Barta, Tennen, & Armeli, 2009; LaBrie, Earleywine, Schiffman, Pederson, & Marriot, 2005; McEwan, McCallum, Bhopal, & Madhok, 1992), sex with multiple partners (Graves 1995; Morojele, et al., 2004), and sexual encounters with casual partners known for a short period of time (Fielder & Carey, 2010a; LaBrie et al., 2014; Olmstead, Pasley, & Fincham, 2013; Testa & Collins 1997). This is particularly true for sexual hookups, which are defined as sexual experiences with partners who are not in a committed romantic relationship (Bogle, 2008). In fact, alcohol was consumed prior to more than half of sexual hookups in a sample of college women, highlighting the prevalence of alcohol consumption in riskier sexual situations (Fielder & Carey, 2010b). As a result of this alcohol-enhanced sexual behavior, individuals can experience consequences such as unwanted pregnancy, sexually transmitted infections (STIs), and negative emotional consequences. For the following study we targeted the impact of alcohol on negative emotional reactions to a sexual scenario using a placebo-controlled alcohol challenge protocol, as a means to more directly assess how alcohol contributes to negative feelings about casual sexual behavior.

ALCOHOL AND SEX

Alcohol is consistently considered a key contributor to casual, sexual hookups (e.g., Lewis et al., 2012). For example, in a sample of first semester female college students, 64% reported drinking before a sexual hookup (Fielder & Carey, 2010b).

Furthermore, alcohol is commonly sought out as a means to facilitate casual sexual encounters (Lindgren, Pantalone, Lewis, & George, 2009) and is more commonly used during sexual activity with uncommitted partners compared to committed, monogamous partners (Cousins, McGee, & Layte, 2010). Although alcohol is often used as a purposeful social lubricant designed to facilitate casual sexual encounters, alcohol may also contribute to unplanned sexual activity.

One explanation for why alcohol contributes to risky sexual behavior is based in alcohol myopia theory (AMT; Steele & Josephs, 1990). This theory postulates that alcohol affects cognitive capacity such that those who are drinking experience a myopic attentional effect whereby most of their attention is focused on salient impelling cues within the surrounding environment, while ignoring less salient inhibiting cues. As a result, in sexual scenarios, individuals often focus on impelling cues, such as the attractiveness of the partner, while paying less attention to inhibitory cues, such as lack of knowledge about the partner's sexual history. One consequence of alcohol myopia may be engaging in atypical or unplanned sexual behavior. Consequently, individuals may blame their behavior on alcohol, which can contribute to wishing they could change their prior behavior (LaBrie et al., 2014) and feeling negatively about their actions (Fisher, Worth, Garcia, & Meredith, 2012).

EMOTIONAL REACTIONS

One common reason for feeling negatively about a recent alcohol-fueled sexual encounter is going further physically than initially planned, which is consistent with consequences of attending to impelling cues while ignoring inhibiting cues when making

a decision about sexual behavior. In fact, when asked about their most recent hookup, more than a third of a sample of college students indicated that they would not have gone so far physically without alcohol (LaBrie et al., 2014). Similarly, in the same sample, 28% said they would not have had sexual relations with their partner had alcohol not been involved (LaBrie et al., 2014), implicating alcohol as a key culprit in the facilitation of uncharacteristic sexual behavior. Unsurprisingly, one consequence of these types of sexual encounters is experiencing negative emotional reactions (Oswalt, Cameron, & Koob, 2005; Paul & Hayes, 2002).

One particularly poignant negative emotional reaction is regret, which is a pivotal experience as it can precipitate future change but may also promote self-blame. Regret is not only troublesome in isolation but also bestows more long-term concerns including less life satisfaction, lower subjective well-being, and depression (Jokisaari, 2003; Lecci, Okun, & Karoly, 1994; Schwartz, et al., 2002). Nevertheless, regret can also be conceptualized as one of the most beneficial emotions as it can lead to such things as “placing past events in context” and “gaining insights into one's own past behavior and current disposition” (Saffrey, Summerville, & Roese, 2008, p. 51). Therefore, regret poses a unique and mutable prospective effect, which exemplifies why regret warrants individualized attention among other negative emotions.

One specific type of regret that is particularly prevalent is alcohol-related sexual regret. This type of regret has been most commonly studied in college students, with 25% of a combined sample of students mandated to an alcohol intervention program and first year college students reporting at least one instance of alcohol-related sexual regret

during the last month (Orchowski et. al., 2012). As further evidence, those who drink heavily are more likely to experience sexual regret (Mallett, Bachrach, & Turrisi, 2008; Morojele et al., 2004). Taken together, these results indicate that alcohol consumption contributes to heightened sexual regret and that alcohol-related sexual regret is a common occurrence among emerging adults.

Although there is clear evidence that alcohol can contribute to engaging in more unrestrained sexual behavior compared to sober encounters (LaBrie et al., 2014), and that those who drink more heavily report more frequent negative emotional consequences of sex (Mallett, Bachrach, & Turrisi, 2008), less is known about the direct impact of intoxication on negative feelings about sex. One argument, contrary to prior findings, is that when individuals do engage in uncharacteristic sexual behavior while drinking they can attribute their sexual behavior to alcohol, thus reporting, “The alcohol made me do it.” As a result, blame for the atypical behavior could be placed on an external, factor (i.e., alcohol), thus taking away fault from the individual. This could mean not feeling negatively about a sexual encounter, but instead claiming the behavior was an anomaly, and reporting neutral or positive feelings about the encounter. Conversely, and consistent with prior self-report studies, individuals may attribute the blame for their advanced sexual behavior on themselves, thus saying, “I should not have allowed myself to get that drunk.” This cognitive appraisal attributes blame on both external (i.e., alcohol) and internal factors (i.e., personal choice to drink), which could lead to negative emotional repercussions directed towards the self, following alcohol-related sexual encounters.

Thus, further research is needed to understand how alcohol directly impacts interpretations of sexual scenarios and what factors may moderate this association.

GENDER AND SOCIOSEXUALITY

Although both men and women endorse experiencing negative emotional consequences of sexual encounters, several studies underscore key gender differences in negative perceptions of sexual experiences. Women, for example, report more negative feelings about sexual experiences, including sexual hookups, than men (Fielder & Carey, 2010b; Lewis et al., 2012; Owen & Fincham, 2011; Owen et al., 2010; Paul & Hayes, 2002). Contrary to the results for women, men tend to feel more positively about their sexual behaviors (Lewis et al., 2012; Owen & Fincham, 2011). This is particularly true when considering the first sexual experience. Women feel more regret both directly after the first time they have sex and at a later period (Sawyer & Smith, 1996). These gender differences leave women at greater risk for harmful negative feelings about their sexual behaviors, which may be associated with distinct societal norms that encourage more sexual promiscuity among men compared to women (Crawford & Popp, 2003). When women do engage in more uninhibited sexual behavior, such as sexual hookups, then they may be at increased risk to feel shame, regret, and other negative self-directed emotions (Paul & Hayes, 2002). Therefore, further research is needed in order to determine why women are at greater vulnerability to alcohol-related emotional consequences.

Beyond gender differences, sociosexuality is another factor that is related to sexual behavior. Measures of sociosexuality create a spectrum whereby on one end fall

those with restricted sociosexuality, or those who require formal commitment and closeness in a relationship before engaging in sex with a partner, and on the other end of the spectrum are those with unrestricted sociosexuality and do not need the same level of commitment for sexual intimacy (Simpson & Gangestad, 1991). Those who are permissive towards casual, uncommitted sex (unrestricted sociosexuality) are more likely to have more sexual partners (Ostovich & Sabini, 2004; Hall & Pichon, 2014; Townsend & Wasserman, 2011), have unprotected sex (Jones & Paulhus, 2012), and experiment with hookups (Hall & Pichon, 2014; Vrangalova & Ong, 2014). Consequently it would follow that unrestricted sociosexuality would also influence one's interpretation of sexual behavior in such a way that those with greater liberality towards uncommitted sexual encounters would interpret casual sex less harshly than those with more restricted sociosexuality who may judge sex outside of a committed relationship as undesirable. As evidence, in a sample of college students, those with less restrictive sociosexuality scores reported greater well-being after they engaged in a casual sexual encounter than those with restrictive sociosexuality (Vrangalova & Ong, 2014).

A novel question is how alcohol interacts with sociosexuality to influence interpretations of alcohol-related sexual behavior. According to AMT, the myopic effect of alcohol can facilitate unplanned behavior, which can result in sex with a partner with whom there is not a formal relationship commitment. For those with unrestricted sociosexuality, this would not be problematic, given they feel positively about sexual behavior outside the bounds of a relationship and may not believe that alcohol was the cause for their sexual behavior. For those with restricted sociosexuality, however, this

alcohol-facilitated behavior may produce more consternation because they would believe the alcohol made them engage in uncharacteristic behavior that was against their morals. In contrast, if they were reflecting on sober sexual behavior with a casual partner those with restricted sociosexuality may realign their interpretation of the behavior such that it would be interpreted less negatively because they would believe that they purposefully and knowingly engaged in the sexual behavior. Therefore, garnering an understanding of how sociosexuality moderates the association between alcohol and negative emotional consequences would add to the limited research on the influence of sociosexuality on the evaluation of sexual experiences.

LIMITATIONS OF PRIOR STUDIES

There are several limitations of prior studies that have examined how alcohol contributes to negative emotional consequences of casual sexual encounters. First, prior studies have largely used retrospective self-reports of alcohol use and sexual behavior (e.g., Fisher et al., 2012; Orchowski et al., 2012), which rely heavily on memory of distant events, prompting inaccuracy of reports. Second, with the exception of two event-level studies (LaBrie, et al., 2014; Lewis et al., 2012), most prior studies have looked at global associations among alcohol use and emotional consequences of sex, making it difficult to measure the direct effect of alcohol on negative feelings about sex. Third, alcohol-related negative emotional reactions to sex have only been examined in college student convenience samples, limiting the generalizability of findings. Fourth, prior studies have failed to examine how attitudes about casual sex (i.e., sociosexuality) interact with intoxication to influence interpretations of sexual encounters with casual

partners. Consequently, novel methodology and assessments are necessary to more directly measure how alcohol contributes to negative emotional interpretations of sexual encounters in more generalizable samples.

THE PRESENT STUDY

To our knowledge, no prior research has examined the causal association between alcohol and negative emotional reactions to a sexual scenario using an alcohol challenge paradigm. This methodology allows for the direct test of an alcohol condition compared to a placebo condition in order to determine if alcohol, beyond expectancies about the effects of alcohol, influences the perceived negative emotional reactions to casual sex. Although laboratory settings do not allow for an examination of actual sexual behavior, this methodology does allow for the use of vignettes as a way to capture sexual intentions and emotional reactions. Consequently, we examined the influence of alcohol on a broad conceptualization of negative emotional reactions and, because of the aforementioned importance, sexual regret.

This study aimed to examine the impact of alcohol, gender, and sociosexuality on global ratings of negative affect and, more specifically, regret in response to an eroticized sexual story. These analyses are the first to test how alcohol impacts negative affect about sexual scenarios both directly after alcohol consumption and the next day. First, we hypothesized that there would be a significant time by beverage condition interaction across the two assessments such that those in the alcohol condition would experience an increase in negative affect and regret between the two assessments while those in the placebo condition would report a decrease in negative affect and regret the following day.

We made this prediction because the next day survey follows a debriefing session where those in the placebo condition become aware that they did not consume alcohol. Consequently those in the placebo condition may consider their sexual behavior to be consistent with their sober values. Conversely, those in the alcohol condition may attribute their behavior to the alcohol and thus feel more negatively about their sexual behavior, which they may label as uncharacteristic. Second, as shown in previous studies for both sexual hookups without alcohol (e.g., Fielder & Carey, 2010) and alcohol-related sex (Orochowski et al., 2012), we hypothesized that women would experience more negative emotional reactions and regret than men. Third, we predicted that those with unrestricted sociosexuality scores would feel less negatively about their sexual experiences both during laboratory session and the following day compared to those with restricted sociosexuality because they are more comfortable with casual sex. Further, we hypothesized that sociosexuality would interact with alcohol in such a way that consuming alcohol would have a negligible effect on negative feelings about sex for those with unrestricted sociosexuality. In contrast, believing alcohol was consumed prior to sex with an uncommitted partner for those with restricted sociosexuality would contribute to greater likelihood that the behavior would be interpreted as uncharacteristic and thus, negative.

Chapter 2: Method

PARTICIPANTS

Participants were originally selected to be a part of a longitudinal study based on their status as in-coming freshman at a southwestern university in the fall of 2004. The study was designed to examine alcohol use and other risky behaviors during the transition into and out of college. This was conducted across 10 waves of data collection, during the four years of college and the two years after college. The targeted population was between the ages of 17-19 years in 2004 ($N = 6,391$), and of these participants 76% indicated interest in the study and met the eligibility requirements ($n = 4,832$). A smaller sample ($n = 3,046$) was randomized to a longitudinal portion of the study and 2,245 of these completed the first survey during the summer before their freshman year of college.

A follow-up study conducted three years after the completion of the original study, re-recruited a portion of the original sample to examine the association among candidate genes, alcohol responses, generalized deviance, and alcohol use trajectories. Participants were eligible to participate in the follow-up study if they completed the initial survey and one or more of the remaining surveys (waves 2-10). To date, 658 participants have provided saliva samples for DNA testing, 593 have completed an online survey, and 118 participated in an alcohol challenge study. For the current analyses we focused on the participants who were deemed eligible and completed the alcohol administration portion of the project. The final sample had a mean age of 27.6 ($SD = 0.55$), was 60% female, 62% Caucasian, 19% Asian, 20% Hispanic, 3% African American, and 2% other racial background.

MEASURES

Demographics

Participants reported on age and gender during the alcohol administration session. Ethnicity was compiled based on reports from the last wave of data collection as part of the original study.

Sociosexuality

The revised Sociosexual Orientation Inventory (SOI-R) (Penke & Asendorpf, 2008) measured participant willingness to engage in casual, uncommitted sexual relationships. This nine-item scale measured three facets: behavior, attitude, and desire. Items 1-4, the behavior scale, were scored on a nine-point Likert scale (1 = *0* to 9 = *20 or more*). Items 5-7, the attitude scale, were scored on a nine-point Likert scale (1 = *strongly disagree* to 9 = *strongly agree*). Finally, items 8 and 9, the desire scale, were scored on a nine-point Likert scale (1 = *never* to 9 = *at least once a day*). All nine items are aggregated to create a full scale score that represents sociosexual orientation, which showed good internal consistency ($\alpha = .81$).

Experimental story

Participants were asked to project themselves into an experimental story that depicted an interaction between themselves and a fictitious character at a party (adapted from George et al., 2009). The story consisted of two parts that were read by participants at different times during the laboratory protocol. The first part, which was read by participants during the baseline survey, depicted the fictional character, who was described as a friend of a friend, and the participant getting to know each other at a social

gathering at a friend's apartment. The second part of the story, which was read during the descending limb of the breath alcohol concentration (BrAC) curve, involved the fictional character and the participant at the character's apartment engaging in eroticized behavior. Participants were instructed to project themselves into the scenario and imagine that they were engaging in the behavior with the fictional character.

Negative affect

Seven items were adapted from previous studies to measure negative affect in reaction to engaging in sexual behavior with a partner from the experimental story (Glenn & Marquart, 2001; Lewis et al., 2012; Owen et al., 2010; Richard, Van Der Pligt, & De Vries, 1996; Watson & Tellegan, 1985). Participants were prompted to "imagine that you and [Dan/Ellen] had sex that night. After having sex, to what extent would you feel...?" They were then asked to rate the likelihood that they would experience the negative affect words on five-point Likert scales (1 = *not at all* to 5 = *extremely*): guilty, anxious, regretful, ashamed, worried, upset, and unhappy. Average scores of the seven items were used for a composite negative affect score during the laboratory protocol ($\alpha = .95$) and on the next day survey ($\alpha = .96$). Regretful was examined in isolation, as well.

Alcohol Manipulation Check

Participants were asked to estimate the number of standard drinks they believed they consumed during the beverage administration. Participants answered this question on the ascending limb of the BrAC curve (approximately .06 g%).

PROCEDURE

Eligibility and compensation

This study was part of a larger study that was designed to look at genetic influences on alcohol use trajectories and alcohol responses. Out of the larger study, sample participants for the alcohol administration study were recruited based on their patterns of alcohol use. They were excluded from participation in the placebo-controlled alcohol administration study if they drank less than three alcoholic beverages at one time during the past 12 months, were pregnant or breastfeeding, took medicine that was contraindicated for alcohol use, had a serious medical condition, or had an Alcohol Use Disorders Identification Test (AUDIT; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001) score greater than 15.

If participants were deemed eligible they were invited to come to the simulated bar lab at the SAHARA laboratory located at the University of Texas at Austin. Before attending the session, participants were asked to refrain from consuming alcohol for 48 hours, eating for four hours, and using caffeine or tobacco for three hours before the session. Participants were compensated for their participation in the study based on beverage condition (\$25 placebo; \$60 alcohol) and distance of their residence from the laboratory (\$40-\$600).

Bar laboratory procedures

Upon arrival to the laboratory, all participants were given a breathalyzer test (Alcosensor IV, Intoximeters, Inc. St. Louis, MO) to confirm that they had a breath alcohol concentration (BrAC) of .00 g%, and female participants provided a urine sample for a hormonal pregnancy test. Undergraduate research assistant recorded participants'

height, weight, gender, and age in order to calculate the alcohol or tonic (men: 2.389 ml/kg of body weight; women: 2.174 ml/kg of body weight) and mixer volume used to reach a target BrAC of .08 g%. Participants were also given a weight-adjusted snack of pretzels in order to create a uniform stomach composition, which helps to control for alcohol absorption across all participants and extend the duration of the ascending and peak limbs of the BrAC curve.

Alcohol administration

Participants were randomized to either an alcohol ($n = 64$) or placebo ($n = 43$) beverage condition. Participants consumed beverages in groups of 2-5 participants in a simulated bar laboratory that is designed to reflect naturalistic drinking conditions. Two beverages were served over 20 minutes and consisted of either 80-proof vodka (alcohol condition) or de-carbonated tonic water (placebo condition) and a mixer (Diet Cherry 7-Up, cranberry juice, and lime juice) in a 1:3 ratio with the goal of achieving a .08 g% BrAC. Each drink was prepared in full view of the participants. In order to create an effective placebo condition each of the glasses was rimmed with vodka and topped with a squirt of 190-proof alcohol, disguised as lime juice, and the bar was wiped down with tequila prior to participant entry in order to promote olfactory and gustatory alcohol cues. These procedures have worked to promote an effective placebo condition in several placebo-controlled studies in the past (e.g., Corbin et al., 2007; Stappenbeck & Fromme, 2014).

Experimental story and debriefing

Participants completed all of the self-report measures individually. During baseline participants completed the sociosexuality measure, in addition to other measures not used for the present study. They also read the first part of the experimental story and provided their intentions to engage in sexual behavior. Beginning 10 minutes after beverage completion, participants had their BrACs monitored and were sent to complete measures at the targeted ascending (.06 g%), peak (.08 g%), and descending (.06 g%) limbs. Given the descending limb most closely corresponds to the time when individuals would be engaging in sexual behavior after a night of drinking, this is when participants read the second part of the experimental story, provided their intentions to engage in sexual behavior, and rated the negative affect words in response to the experimental story. Upon completion of the laboratory procedures and detoxification to a BrAC of .04 g%, participants were debriefed about the study, provided monetary compensation, and provided transportation home.

Next day survey

The final procedure asked participants to complete the “next day” survey which was sent via email to participants the morning after completing the bar lab protocol. Participants were asked to rate their current feelings about the previous night’s sexual behavior using the same negative affect words used during the alcohol administration protocol.

DATA ANALYTIC PLAN

In order to examine how beverage condition affects the change between negative affect and regret between the laboratory session and the next day survey we ran repeated

measures analysis of variance models that examined the time by beverage condition interaction in SPSS Version 18. To clarify the nature of the beverage condition and time interaction we also examined separate repeated measures ANOVAs for each beverage condition in order to determine how the ratings of negative affect and regret changed across the two assessments for each condition. For all repeated measures ANOVA analyses we controlled for gender.

We were also interested in exploring same day and next day negative affect and regret separately in order to test whether the effect of alcohol on negative interpretations of a casual sexual scenario is stronger with the passage of time. Further, we wanted to examine the next day assessment separately because this would most closely correspond to when individuals would be analyzing and forming reactions to the previous night's sexual behavior. In order to assess predictors of same day and next day negative affect and regret separately we ran a series of hierarchical linear regression analyses in SPSS. We ran two sets of regression analyses for each outcome (composite negative affect and regret). The first and second set of analyses regressed same day and next day negative affect onto gender, beverage condition, and sociosexuality and included the two-way interaction terms for each of the predictor variables. Then, the same predictors were used to explain level of same day and next day regret.

Chapter 3: Results

We excluded those who reported that they consumed zero drinks during the placebo condition ($n = 4$), those who reported being attracted to the same gender ($n = 6$), and those who did not complete the next day survey ($n = 1$). Therefore the final sample consisted of 107 participants.

REPEATED MEASURES ANALYSES

Using within-subjects analysis of variance (ANOVA) models we examined the time by beverage condition interaction on the level of general negative affect and regret. When examining negative affect between the laboratory protocol and the next day survey there was a significant interaction between beverage condition and time ($F(1,106) = 5.57, p < .05$; Table 1; Figure 1). To further understand the nature of this association we ran separate ANOVAs for those in the placebo and alcohol conditions. There was a significant main effect for time in the placebo condition ($F(1,39) = 5.20, p < .05$), but not for the alcohol condition ($F(1,60) = 0.40, p > .05$), indicating that there was not a change across time in rating of negative affect for those in the alcohol condition, but there was a significant decrease in negative affect for those in the placebo condition.

When assessing levels of regret between the laboratory protocol and next day survey there was a marginally significant interaction between beverage condition and time ($F(1,106) = 2.47, p = .12$; Table 1). Although there was not a significant interaction, we ran separate ANOVAs for those the placebo and alcohol conditions for descriptive purposes. There was not a significant effect of time on level of regret for the placebo condition ($F(1,39) = 1.71, p > .05$) nor the alcohol condition ($F(1,59) = 0.09, p > .05$).

SAME DAY NEGATIVE AFFECT

To better understand how beverage condition, sociosexuality, and gender affected level of negative affect we examined separate hierarchical regressions on same day and next day negative affect. First, we ran a hierarchical linear regression analysis to examine the influence of beverage condition, sociosexuality, gender (Step 1), and their interaction terms (Step 2) on same day negative affect. A significant effect was found for Step 1 ($F(3,104) = 13.61, p < .05$), with an R^2 of 0.29, whereby sociosexuality significantly predicted the level of negative affect during the laboratory protocol ($Beta = -.34, p < .01$). There was also a significant main effect of gender ($Beta = .32, p < .05$) such that women reported feeling more negatively. However, beverage condition did not significantly predict negative affect during the alcohol administration protocol. Finally, the addition of interaction terms (Step 2) did not explain significantly more of the variance in the outcome variable ($F(6,104) = 6.66, p = .96$, with an ΔR^2 of 0.01).

NEXT DAY NEGATIVE AFFECT

A hierarchical linear regression model was calculated to predict negative affect based on gender, beverage condition, sociosexuality (Step 1), and their interaction terms (Step 2). A significant regression equation was found ($F(3,104) = 14.27, p < .05$), with an R^2 of 0.29 (Table 2). The analysis showed that level of sociosexuality significantly predicted the level of negative affect on the next day survey ($Beta = -.36, p < .05$), such that those with higher scores felt less negatively about their behavior the next day. There was also a significant main effect of gender ($Beta = .28, p < .05$) such that women reported feeling more negatively than men. Further, there was a marginal main effect for

beverage condition on level of next day negative affect ($Beta = .16, p = .06$), whereby those in the alcohol condition felt more negatively. Finally, the addition of interaction terms (Step 2) did not explain significantly more of the variance in the outcome variable ($F(6,104) = 7.01, p = .95$, with an ΔR^2 of 0.01).

SAME DAY REGRET

Although we did not find a significant time by beverage condition interaction in the repeated measures ANOVA, for descriptive purposes we examined the effect of beverage condition, sociosexuality, and gender of same day and next day regret. First, we ran a hierarchical linear regression analysis to examine the influence of beverage condition, sociosexuality, gender (Step 1), and their interaction terms (Step 2) on same day regret. A significant effect was found for Step 1 ($F(3,104) = 12.75, p < .05$), with an R^2 of 0.28, whereby sociosexuality significantly predicted the level of negative affect during the laboratory protocol ($Beta = -.34, p < .01$). There was a significant main effect of gender ($Beta = .30, p < .05$) whereby women reported feeling more negatively than men. However, beverage condition did not significantly predict negative affect during the alcohol administration protocol. Finally, the addition of interaction terms (Step 2) did not explain significantly more of the variance in the outcome variable ($F(6,104) = 6.19, p = .99$, with an ΔR^2 of 0.01).

NEXT DAY REGRET

A multiple linear regression model was calculated to predict next day regret alone based on gender, beverage condition, sociosexuality (Step 1) and their interaction terms (Step 2). A significant regression equation was found ($F(3,104) = 13.13, p < .05$), with an

R^2 of 0.28 (Table 3). The analysis showed that level of sociosexuality significantly predicted the level of regret on the next day survey ($Beta = -.36, p < .05$). There was also a significant main effect of gender ($Beta = .24, p < .05$), such that women reported feeling more regret than men. Further, there was a significant main effect for beverage condition on level of next day regret ($Beta = .18, p < .05$) whereby those in the alcohol condition reported greater levels of regret the day following alcohol administration compared to those in the placebo condition. Finally, the addition of interaction terms (Step 2) did not explain significantly more of the variance in the outcome variable ($F(6,104) = 6.58, p = .82$, with an ΔR^2 of 0.01).

Chapter 4: Discussion

The present study was the first to use a placebo-controlled alcohol challenge protocol to directly test the effects of alcohol on emotional reactions to casual sexual behavior. The study also examined how values about casual sex and gender influenced these responses. Our hypotheses were partially supported, as consuming alcohol, compared to a placebo, contributed to more regret the day following alcohol administration and those in the placebo condition reported a decrease in negative affect across the two assessments. Similarly, those with unrestricted sociosexuality and men reported lower ratings of all emotional reactions. Our analyses did not support the moderating effect of sociosexuality or gender on the association between beverage condition and negative affect.

ALCOHOL AND NEGATIVE EMOTIONAL REACTIONS

As predicted, our results supported a significant main effect of beverage condition on regret during the next day survey and significant differences in change of overall negative affect across the two assessments, whereby those who consumed alcohol felt more negatively the next day. One reason we may not have seen an effect of beverage condition during the laboratory protocol may be the result of our effective placebo. Expectancies about the effects of alcohol on behavior may explain why those in the placebo condition reported similar rates of negative feelings about the sexual scenario as those in the alcohol condition. Further, regardless of beverage condition, participants were likely feeling fatigued by the end of the lengthy protocol, which could also contribute to more overall negative feelings for all participants. Another reason we may

not have seen an effect may be the result of negative emotional reactions being assessed on the descending limb of the BrAC curve, which typically corresponds to greater feelings of sedation and fatigue, and lower reports of stimulation (Morean & Corbin, 2010). Sexual arousal, which may reflect the stimulating effects of alcohol that most often occur on the ascending limb of the BrAC curve, is associated with increased sexual behavior and intentions (Cooper, 2002; Davis et al., 2009). Conversely, on the descending limb individuals' sedation may contribute to greater overall negative, unappealing feelings, which could contribute to increased negative feelings about sexual behavior, as compared to the stimulating, arousing feelings reported during the ascending limb. Therefore, one potential extension of this study would be to test the negative responses to a casual sexual scenario at different points along the BrAC curve.

Furthermore, the assessment of negative affect during the laboratory protocol corresponded to when the participant was imagining him/herself having sex with the partner in the experimental story, and thus they were responding to a hypothetical behavior that was currently happening. It may be that regret and other negative emotions are established with the passage of time, which allows someone to process the ramifications of their past behavior and decide if they feel negatively, which may explain the significant findings for the next day follow up survey.

Divergent from results during the laboratory protocol, those in the alcohol condition reported significantly greater regret during the follow up assessment and a greater consistency of elevated negative affect across the two assessments. Immediately after the laboratory protocol and before the next day follow up survey, participants were

debriefed. This included divulging to those in the placebo beverage condition that they did not receive alcohol. Thus, by the time the follow up survey was administered, all participants knew if they had consumed alcohol the preceding day. It appears knowing alcohol was consumed prior to a sexual act contributes to feeling more negatively.

Our results support previous findings from cross-sectional (e.g., Oswald et al., 2005) and event-level studies (Scaglione et al., 2014). Specifically, our results indicate that when individuals believe they are intoxicated, even if they are not actually pharmacologically impaired, they feel more negatively about their sexual behavior than they do if they learn they were not impaired by alcohol. The realization that alcohol was not consumed could trigger a reframing of attribution that culminates in relief.

Participants in the placebo condition realize that alcohol was not a potential confounding factor in the sexual decision making process and thus may feel more confident that their behavior was deliberate. This fits with the self-serving attribution bias, which postulates that people tend to put more blame on environmental circumstances when they fail compared to when they succeed where they attribute their behavior to personal qualities and abilities (Mezulis, Abramson, Hyde, & Hankin, 2004). Because placebo participants learned that alcohol was not consumed and there was not an external, environmental factor on which to blame their behavior, they must attribute their behavior to internal, personal characteristics, thus labeling their behavior a “success” and feeling less negatively. Meanwhile, those in the alcohol condition do not experience the same change in attribution, supporting the similarity in negative feelings during the laboratory protocol and the next day. They do not feel the same relief as those in the placebo condition who

learn their behavior was unimpaired, but rather continue to feel negatively about their alcohol-fueled behavior.

WOMEN AND NEGATIVE FEELINGS

Similar to previous studies (Fielder & Carey, 2010a; Paul & Hayes, 2002), our results indicated that women, compared to men, reported greater levels of both general negative feelings and regret in response to a hypothetical, casual sexual encounter. One reason for this gender discrepancy may be that society dictates women should be more harshly judged for sexual promiscuity, whereas men are rewarded for the same behavior (Crawford & Popp, 2003; Smith, Mysak, & Michael, 2007). More specifically, both men and women judged other women more harshly than men for having sex outside of a committed relationship, whereas sex within a committed relationship was regarded as acceptable for both genders (Sprecher, Treger, & Sakaulk, 2013). Thus, given the experimental story in this study depicted a casual first sexual encounter, women may be primed, given the double standard that exists for women, to report feeling more negatively about their uncommitted sexual behavior. Men, on the other hand, may feel that having a first sexual intercourse encounter with a casual partner fits with societal expectations and therefore report feeling less negatively and having less regret.

SOCIOSEXUALITY AND NEGATIVE EMOTIONAL CONSEQUENCES

Although we did not find a significant interaction between beverage condition and sociosexuality scores, our analyses did support a significant main effect of sociosexuality on reports of negative affect and regret. Similar to a previous study in which those who were more permissive towards casual sex reported greater well-being after a casual

sexual incident compared to those with more restricted sociosexuality (Vrangalova & Ong, 2014), participants with unrestricted sociosexuality reported feeling less negatively about a hypothetical casual sexual encounter. Those who have more liberal beliefs about sex will label their casual sexual behavior as acceptable and thus may feel confident and secure about their uncommitted sexual encounter. Conversely, those who reported more restricted sociosexuality may feel that having sex with someone with whom they did not have a formal, monogamous relationship, much like the scenario depicted in our experimental story, would be uncharacteristic and thus would contribute to feeling negatively. Furthermore, these findings suggest that where a person falls along the continuum of sociosexuality, a composite of behaviors, attitudes, and desires about uncommitted sex, is a robust predictor of emotional reactions to sexual events, regardless of alcohol intoxication.

LIMITATIONS AND FUTURE DIRECTIONS

These findings should be interpreted in light of several limitations. First, the negative affect and regret assessments during the laboratory protocol were only assessed on the descending limb of the BrAC curve. Although the BrAC at this point is relatively low, we wanted the assessment of these measures to correspond most closely in time to when individuals would be making decisions about engaging in sexual behavior in a naturalistic setting. Future studies may want to examine these associations at higher BrACs. Second, we did not use a no alcohol condition, so we cannot directly compare how reactions to a sober sexual scenario, independent of alcohol expectancies, compare to intoxicated reactions. With a no alcohol condition, we may expect to see a larger

difference in ratings of negative affect during the laboratory session, compared to those who believe they have consumed alcohol (even though they had not). Third, we did not assess negative affect and regret at baseline so we were unable to determine whether participants in the two beverage conditions differed on their baseline endorsement of negative affect. Fourth, our sample consisted of primarily White participants who were about 28-years-old and thus cannot be generalized to other populations. However, our study is the first to examine these constructs in a post-college sample, which provides an important extension from studies of primarily college student samples.

Despite these limitations our results provide support for the direct impact of alcohol, sociosexuality, and gender on negative emotional reactions to casual sexual behavior. Future studies could examine these associations in naturalistic settings through the use of event-level monitoring, which could test how level of intoxication influences emotional reactions to actual casual sexual behavior. Daily monitoring studies could also be used to determine if cumulative emotional repercussions to sexual behavior bestow vulnerability to longer-term negative consequences, such as depression or anxiety. This work may be especially important among women, as they are at increased risk for negative sexual consequences. Understanding how alcohol and individual factors impact negative emotional consequences could also facilitate adaptations to current college- and community-based interventions. One example would be to highlight the potential negative outcomes of long-term regret about alcohol-fueled casual sex during brief motivational interviewing. Protective behavioral strategies, such as making sure you go home with a friend after drinking (Martens et al., 2005), could also be emphasized as a

way to decrease the risk for experiencing negative emotional reactions to sexual encounters. Overall, these results highlight the importance of understanding factors, including alcohol, that contribute to increased risk for harmful, negative self-blame and regret in response to casual sexual behavior.

Variable	During Session		Next Day		<i>F</i>	<i>p</i> -value
	Mean	SD	Mean	SD		
Negative Affect						
Alcohol	1.29	1.18	1.36	1.18	5.57	0.02
Placebo	1.21	1.11	1.00	1.06		
Regret						
Alcohol	1.37	1.42	1.52	1.34	2.47	0.12
Placebo	1.47	1.47	1.07	1.28		

Table 1: Negative Affect and Regret across Time

Notes: All analyses used repeated measures analysis of variance

Step and Predictor	Next Day Negative Affect			
	β	t	R^2	ΔR^2
Step 1			0.29	0.29*
Gender	0.24	2.72***		
Beverage Condition	0.18	2.08†		
Sociosexuality	-0.36	-4.00***		
Step 2			0.30	0.01
Soc x Bev	-0.20	-0.50		
Gen x Bev	0.20	0.59		
Gen x Soc	0.02	-0.06		

Table 2: Predictors of Next Day Sex-Related Negative Affect

Note. Soc = Sociosexuality, a measure of permissiveness towards casual sex; Gen = Gender; and Bev = Beverage Condition. † = .06, * $p < .05$, ** $p < .01$, *** $p < .001$

Step and Predictor	Next Day Regret			
	β	t	R^2	ΔR^2
Step 1			0.28	0.28*
Gender	0.28	3.14***		
Beverage Condition	0.16	1.94**		
Sociosexuality	-0.36	-4.02***		
Step 2			0.29	0.01
Soc x Bev	-0.05	-0.14		
Gen x Bev	0.03	0.09		
Gen x Soc	-0.21	-0.58		

Table 3: Predictors of Next Day Sex-Related Regret

Note. Soc = Sociosexuality, a measure of permissiveness towards casual sex; Gen = Gender; and Bev = Beverage Condition. * $p < .05$, ** $p < .01$, *** $p < .001$

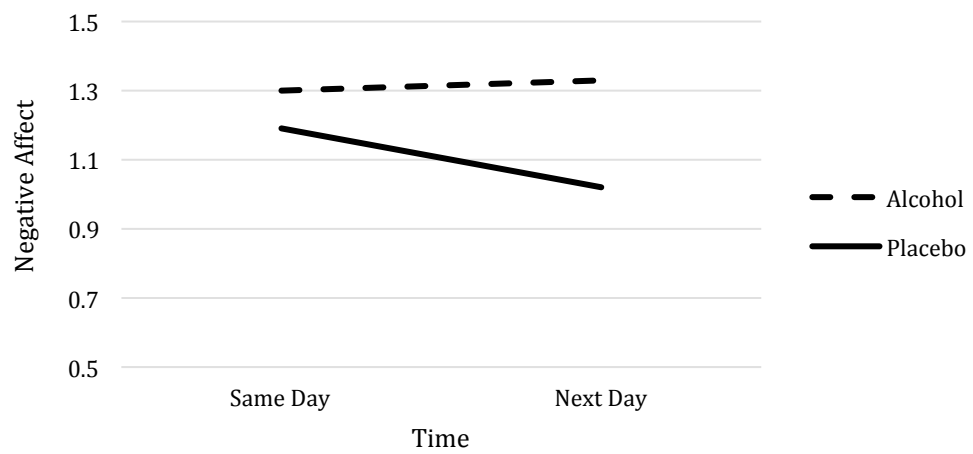


Figure 1. Negative affect across time by beverage condition

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